clined to it. It may be well to mention that this distortion of form was not caused by maladjustment of my speculum, because I have an original apparatus for testing that, and for adjusting by when needed, and which reports most sensitively the slightest deviation. I knew, therefore, the cause was not instrumental.

The general tone of the satellite was very dark, but not nearly as black as a shadow, although in the absence of such a comparison it might have been supposed to be black by an inexperienced observer. Its preceding margin and northern end were marked by a really black shading, which had very much the form of an inverted comma. Had this black shading been of the nature of a dark limb, it should have appeared on the opposite side of the satellite.

18 *Preston Street, Brighton.*

Occultations of λ Geminorum and κ Cancri. By Henry Pratt.

Occultation of λ Geminorum on March 6.

It occurred about the predicted time, but I omitted to note time precisely, owing to an unexpected phenomenon. The disappearance was observed by a power of 270 focussed very sharply on the star. Definition fair, but at times slightly unsteady.

While preparing to note the time of disappearance a diminution of the star's brightness suddenly commenced, and automatically at same instant I commenced counting beats of the sidereal clock. When I had counted the third second the star quite suddenly disappeared completely, and during the interval, which I estimated $= 3^{s}\cdot 2$, its brightness was *gradually diminishing*, until when last seen it was not more than one-fourth of the brightness it exhibited before the phenomenon began. I watched for half a minute, but no reappearance or projection on Moon's limb took place. The reappearance occurred within the opened webs of the micrometer, but was not seen until the star had emerged about 1^{s}, owing to much rippling of the Moon's limb which commenced a few minutes previously.

Occultation of κ Cancri on March 8.

The disappearance was observed through haze with power 270 focussed (as sharply as the state of definition would allow) upon the star. It occurred at $10^{h}\ 18^{m}\ 46^{s}$ G.M.T., and was what is

usually termed perfectly instantaneous. Certainly it did not occupy ·2 of a second, but I thought it took place by a gradual diminution of brightness, although the time was so very short. Reappearance unseen, because at that time clouds covered the Moon.

18 *Preston Street, Brighton.*

The Radiant Points of Fireballs. By W. F. Denning.

There are certain dates of the year when fireballs have displayed a marked ascendency, and when their radiant points have become determinable from the path directions of such as have been accurately recorded. The catalogues of various meteor observers comprise a large number of these observations, though the relative proportion of meteors equalling or exceeding *Jupiter* is somewhat less than three per cent. of the aggregate number registered. In addition to this source of information there are the Annual Reports of the British Association Committee on Luminous Meteors, in which are published a large number of important computations (chiefly by Prof. A. S. Herschel) in connection with the heights, velocities, and radiant points of fireballs. Combining these results with my own and other observations of meteors during recent years, I have endeavoured to find the positions of some of the leading fireball radiants of the year.

In an investigation of this kind many difficulties have to be confronted, for a considerable number of instances are met with where the evidence of certain showers cannot yet be regarded as proved with sufficient distinctness. It is also doubtful, owing in many cases to insufficient materials, as to which are the systems entitled to precedence. There is also another point of signal importance with respect to the *durations* of these displays of large meteors. At first I attempted to group the radiants into very short periods of about two or three nights, but found the observations incompatible with such limited duration. In some well-defined examples they appear to extend over several weeks, and in fact present an analogy to showers of ordinary shooting stars, with which they are no doubt intimately associated; and as further records accumulate, the probable identity of such streams will be yet more closely established. As evidence of the long duration referred to, I may mention the shower in Scorpio (June–July) and Gemini (Nov.–Dec.), which obviously continue in action during a lengthy interval, as the following instances of doubly-observed fireballs (computed by Profs. Niessl and Herschel respectively) will sufficiently prove:—